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Chronic Internal Hydrocephalus.*

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DEFINITION.—An excess of cerebro-spinal fluid in the interior of the brain constitutes an internal hydrocephalus. The disease may be acute or chronic. Chronic internal hydrocephalus may be congenital or acquired, and it is the latter form of the disease with which I intend to deal. It is known under various synonyms, amongst which are:—

Chronic Dropsy of the Ventricles of the Brain; Ependymitis; Immobilité.

OCCURRENCE.—Horses are said to be most frequently attacked of the domestic animals, especially coarse-headed geldings, though statistics of its occurrence are not available. In ruminants it is frequently of the congenital type; in dogs Frohner saw twenty cases in 70,000 animals examined, while Schindelka has described the condition in the pig.

Normal anatomy of the parts concerned.—A very brief survey of the parts of the central nervous system affected in hydrocephalus might not be out of place.

(1) *The sub-arachnoid cisterns.*—The larger of these are cisterna cerebello-medullaris (cisterna magna), lying between the cerebellum and the medulla oblongata, cisterna interpeduncularis, situated over the interpeduncular fossa, cisterna chiasmatis, related to the optic chiasma and cisterna pontis.

(2) *The ventricles of the brain.*—These comprise the two lateral ventricles, the third ventricle and the fourth ventricle. Each lateral ventricle represents the cavity of the vesicle from which the cerebral hemisphere was developed, and communicates with the third ventricle by the interventricular foramen of Munro, which is a small opening beneath the fornix. The cavity is not spacious, as the roof and floor are mostly in contact. The ventricle is, for convenience, described as consisting of central part, anterior cornu, and inferior cornu. The central part has its roof formed by the corpus callosum, its medial wall formed by the septum pellucidum, and the fornix and its floor formed by the caudate nucleus, the choroid plexus (covered by the ependyma) and the fornix, together with the hippocampus and its fimbria hippocampi, while the lateral wall does not exist, as the floor and the roof meet here. The anterior cornu is a forward continuation of the central part beyond the foramen of Munro; it inclines ventrally, and in some animals it ends blindly about the level of the olfactory tubercle, but in most it is continuous with the cavity of the olfactory bulb. The inferior cornu is a tapering curved prolongation of the central part running into the pyriform lobe; its walls contain the tail of the caudate nucleus and diminished continuations of the choroid plexus, fimbria and hippocampus.

The third ventricle is a narrow space between the two thalami which form its walls; it is roofed over by a triangular choroid tela, and the ventricle contains several recesses—the optic, infundibular, pineal, and supra-pineal recesses. The entrance to the ventricle is through the foramen of Munro and its exit is the aditus ad aqueductum cerebri (of Sylvius). The aqueduct of Sylvius runs through the mid-brain and connects the third and fourth ventricles.

The fourth ventricle represents the cavity of the original vesicle from which the hind-brain was developed. The roof is somewhat tent-like, and is formed by the anterior medullary velum and the posterior medullary velum, the latter containing the choroid plexuses of the fourth ventricle. The floor and walls are formed by the medulla and pons. On account of its shape the cavity of the fourth ventricle is known as the rhomboid fossa, and it is connected caudally with the central canal of the spinal cord. The membranous roof of the fourth ventricle is defective at the extremity of each lateral recess, where a small opening, known as the lateral aperture (of Luschka), places its cavity in communication with the sub-arachnoid space; in some animals (not in the dog) a perforation is found in the roof between the clavæ, on the dorsal surface, and is known as the foramen of Magendie (apertura medialis ventriculi quarti). These two or three apertures are the only means provided for the escape of the fluid contained in the ventricles of the central nervous system; it is poured out into the sub-arachnoid space.

Normal physiology of the parts.—The choroid plexuses of the brain act as glands and the secretion is the cerebro-spinal fluid. Experimental evidence indicates that the bulk of the fluid is secreted above the aqueduct of Sylvius. This fluid, secreted by the plexuses, collects in the lateral ventricles and passes into the third ventricle through the foramen of Munro; it then passes on into the fourth ventricle, whence it must either go into the central canal of the spinal cord or pass by way of the lateral apertures, or the foramen of Magendie, into the sub-arachnoid space at the base of the brain (*i.e.*, cisterna magna). There

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is no external opening outside the dura mater for the escape of the fluid, and available evidence indicates that it is absorbed by the veins.

Early history of the disease.—Magendie (in 1825) was the first to describe anatomical obstruction as the cause of hydrocephalus, and he noted that the hydrocephalus was proximal to the obstruction.

Hilton (in 1860) records one case of stenosis of the aqueduct of Sylvius and two cases of obstruction by scar of the foramen of Magendie. In all cases the hydrocephalus was proximal to the obstruction.

Luschka (in 1855) discovered the lateral openings in the lateral recesses, and these are found to be present in all domestic animals.

Some workers have recorded cases where no obstruction could be observed, and consequently the disease has been divided into two classes:—(1) The obstructive type and (2) the idiopathic or communicating type.

Experimental production of Hydrocephalus.—W. E. Dandy, in America, conducted a series of experiments on dogs, and the following are some of his results:—

(1) When he caused obstruction at the aqueduct of Sylvius, he produced hydrocephalus of the third and two lateral ventricles. From this he deduces that cerebro-spinal fluid forms in the ventricles, that absorption is at least less than production in the ventricles, that the aqueduct of Sylvius is a necessary outlet for the lateral ventricles and the third ventricle, and that no collateral channels exist.

(2) When one foramen of Munro was obstructed, the result was the production of an unilateral hydrocephalus.

(3) The obstruction of one foramen of Munro, together with the removal of the choroid plexus of that side, produced collapse of that ventricle; hence it must be choroid plexus which forms the cerebro-spinal fluid, and the ependyma is not concerned with the production of it.

(4) When the choroid plexuses of both lateral ventricles were removed, and also the aqueduct of Sylvius was occluded, hydrocephalus of the two lateral ventricles and the third ventricle was the result, but the condition was produced only slowly. Therefore the choroid tela of the third ventricle produces cerebro-spinal fluid slowly. (Removal of the choroid tela of the third ventricle was found impracticable owing to the subsequent intra-ventricular hæmorrhage.)

(5) It has been noticed that by compression of both jugular veins in the dog an increased amount of cerebro-spinal fluid is produced immediately, but this amount decreases in a few minutes when collateral circulation begins to become effective. By ligation of the vena magna (which drains the entire interior of the cerebrum) at its point of origin, Dandy caused the slow development of hydrocephalus; all the ventricles became distended, as also did the aqueduct of Sylvius, while the lateral apertures of Luschka became enlarged. This case was one of over-production (and not of under-absorption) of cerebro-spinal fluid, and is of the idiopathic or communicating type of hydrocephalus.

(6) The exclusion of the anterior sub-arachnoid cisterns from absorption of cerebro-spinal fluid by the production of a perimesencephalic band of adhesions resulted in the production of hydrocephalus of all the ventricles. Here again it is of the idiopathic or communicating type, but in this case it is due to lack of absorbing surface. The conclusion from this experiment is that the sub-arachnoid space is at least the main absorbing surface.

Note.—Only in the case produced by ligation of the vena magna was over-production of fluid the cause of the disease; in all others (whether of the obstructive or the communicating type) diminished absorption was the cause.

Pathological Changes.—In cases occurring in young animals the bones may be soft, and there may be a bulging of the frontal and parietal regions. The normal cerebral convolutions are often almost obliterated by pressure, as is also the longitudinal fissure. In the horse there is frequently a protuberance found on the occipital lobe of the cerebrum lying in relation to the tentorial opening, while the anterior border of the pons is often pressed upwards. The cerebellum and cranial nerves are usually unaffected. The ventricles of the brain are distended with excess of cerebro-spinal fluid, and when obstruction is the cause, the distension is proximal to the obstruction. The amount of fluid varies from about one to five ounces, and it usually resembles normal cerebro-spinal fluid, though it sometimes contains urea, cholesterin, fibrinous flocculi, or it may be turbid. The septum pellucidum is stretched, perforated, or even ruptured, while the thickness of the roof of the lateral ventricle is usually diminished, and it may be difficult to distinguish between the white and grey matter of the cerebrum, all being pale coloured. The ependyma is often thickened, and sometimes granular and rough. The arachnoid may show signs of inflammation and consequent adhesions by scar tissue. An obstruction may be found at:—(1) One or other foramen of Munro, or both. (2) Aqueduct of Sylvius, with or without the posterior part of the third ventricle. (3) The lateral apertures of Luschka and the foramen of Magendie (when present). (4) The anterior part of the cisterna magna.

Abnormal Physiology and Suggested Causes of Hydrocephalus.

Class A.—Those in which there is over-production of cerebro-spinal fluid; they are all of the "communicating" type. In this case the quantity of cerebro-spinal fluid formed by the choroid plexuses is so abundant that it cannot escape through the normal passages. It accumulates under excessive pressure and causes distension of the ventricles with gradual atrophy of the brain substance, which is apparently selective (*i.e.*, it causes hydrocephalus).

This type of the disease occurred experimentally after ligation of the vena magna in the dog; it is also seen in compression of the vein of Galen by tumours in the cerebellum and corpora quadrigemina,

while it is sometimes observed in thrombosis of this vein. Chronic inflammatory processes, either in the meninges at the base of the brain or in the choroid plexuses and ependyma, may all cause obstruction to the outflow of blood through the veins of Galen; this condition is frequently seen in cases of rickets in young animals. Acute inflammatory processes may cause over-production of cerebro-spinal fluid, owing to the excessive amount of blood carried to the brain. Hepatic, gastric, pulmonary and cardiac affections undoubtedly predispose to ventricular dropsy, but some other factors to which has been ascribed the cause of the disease seem to be no longer tenable as such; amongst these are:—(1) Cysts or tumours of the choroid plexuses; but these are found in animals with or without hydrocephalus with equal frequency. (2) Senile atrophy of the brain leading to dilatation of the ventricles; but this is unlikely owing to the comparatively short life of domestic animals. (3) Loss of the internal secretion of the testes in geldings leading to lack of development of the brain substance and subsequent hydrocephalus. This is suggested by some, but here again others have seen the disease particularly in stallions, and it is well known that it is common in dogs which have not been castrated.

Exposure to undue heat, over-exertion, over-feeding on rich foods, pressure on both jugular veins, all probably produce the condition only temporarily.

Class B.—Those in which there is diminished absorption of cerebro-spinal fluid. Here again the fluid accumulates under excessive pressure, and causes distension of the ventricles with gradual, selective atrophy of the brain substance. The class may be divided into two types:—

(1) *Communicating Type.*—Where the area of absorption of cerebro-spinal fluid is reduced in the sub-arachnoid space. This was experimentally produced by a perimesencephalic band of connective tissue, thus shutting off all cisterns of the brain anterior to the cisterna magna. This cause probably accounts for many more cases than is usually realised.

(2) *Obstructive Type.*—Here the obstruction may be at one of the following places:—

(*a*) Foramen of Magendie and both lateral apertures of Luschka. Such obstruction may be caused by a chronic posterior basal meningitis producing occlusion of the foramina by scar tissue, by a meningo-encephalitis following a depressed fracture producing occlusion by scar as before, or even by the downward pressure of a cerebellar tumour on the fourth ventricle producing hydrocephalus proximal to it.

(*b*) Aqueduct of Sylvius. Here the obstruction may be caused by a median tumour of the pons or pineal body pressing on the aqueduct and causing obstruction by mere closure; it may be caused by parasites occluding the lumen (*e.g.*, Echinococcus or Cœnurus), or, according to Dexler, the anatomical relationships of parts of the brain and cranial cavity in the horse (only of domestic animals) may be the cause. He considers that the usual cause of hydrocephalus in the horse is narrowing of the aqueduct of Sylvius by pressure on the corpora quadrigemina due to an abnormally strong protrusion of the occipital lobe of the cerebrum through the adjacent opening of the tentorium cerebelli. He explains how he considers this comes about, and goes on to show that only in the horse, of domestic animals, do these special causative anatomical relationships exist.

The explanation of Dexler's theory is as follows:—The cerebral arteries pulsate at each systole (contraction) of the heart, and this produces pulsation of the brain. In inflammatory conditions of the brain (excitement, exertion, or sudden changes of outside temperature may also cause it) there is excessively increased force of pulsation which is also excessively prolonged, and thus there is *continued increased intra-cranial pressure.* The brain tissue is very little compressible, and it is enclosed in the rigid, bony, cranial cavity, with its main exit towards and through the foramen magnum. (Normally there is sufficient expansion into the sub-arachnoid spaces and the ventricles of the brain.) Thus, part of the occipital lobe is forced into the adjacent opening of the tentorium cerebelli, which is rigid and frequently ossified. In this way a three-cornered protrusion is produced which presses on the corpora quadrigemina and tends to diminish the lumen of the aqueduct of Sylvius, and thus reduces the flow of cerebro-spinal fluid through it. The consequent damming back of cerebro-spinal fluid further increases the intra-ventricular pressure till finally the aqueduct is entirely occluded. Hence recovery from the condition is unlikely.

Dexler gives anatomical reasons for the frequency of this cause in the horse:—

The horse has a moderately large tentorium cerebelli which is almost completely ossified. Consequently it is unyielding, yet leaves a sufficiently large tentorial opening (4·2 cms. high by 3·5 cms. wide) for the occipital lobe to protrude through it. (It is considered normal if this triangular protrusion is not more than 2mm. thick.)

In the dog there is a very large tentorium cerebelli which is completely ossified, while its edges overlie the anterior corpora quadrigemina, and the falx cerebri entirely separates the caudal parts of the hemispheres, consequently a pressure swelling cannot occur.

In the ruminant and in the pig the tentorium cerebelli is entirely fibrous, and there is a large tentorial opening, while the falx cerebri does not separate the caudal parts of the hemispheres, consequently no pressure swelling appears, because the opening is large and yielding, and the caudal parts of the hemispheres are in contact with the anterior third of the cerebellum.

(*c*) One foramen or both foramina of Munro. In such cases the obstruction has been found to be due to cysts of parasites, tumours, etc., which block the exit of the cerebro-spinal fluid either permanently or intermittently, producing permanent or intermittent symptoms of hydrocephalus.

SYMPTOMS.—These are more pronounced in damp, hot weather, and are better seen after than before exercise; they are sometimes intermittent.

In young animals there is often enlargement of the head and separation of the bones of the cranium from one another, the intervals being filled by a soft translucent membrane.

In adult animals the symptoms are those of dulness, stupor, lethargy, insensibility, or coma. Fever may be present or the temperature may be sub-normal. The pulse is soft, slow and infrequent. The respiration is slow and deep; while in dogs there is usually intermittent vomiting. Peristalsis is interfered with, and is followed by constipation. The eyelids are semi-closed, and there may be partial or complete blindness due to pressure on the optic chiasma, and there may also be commencing optic neuritis, later leading to atrophy of the eye with consequent slight sinking of the eyeball. The facial expression is dull, sleepy and fixed; the head is often rested on fixed objects or held hanging between the fore-legs, or it may be rolled about aimlessly (especially in dogs). The intelligence is defective, the animal paying little attention to its surroundings or to the voice of its master; horses fail to obey the bit, whip, etc. Dogs frequently moan or cry in a maniacal manner. An affected animal may be roused by a loud noise (as by shouting), but it soon relapses into its former state. Skin sensation is diminished or lost; pin-pricks may be unnoticed, and flies are not removed. Skin reflexes are usually lost; but Hutyra and Marek describe an exaggerated patella reflex. At rest, the limbs and head are held in all kinds of unnatural positions, and if the limbs are placed in an awkward position by the clinician, they are left so, though the animal can voluntarily move them. In motion there is noticeable a weakness of the limbs, which may be bilateral, but is usually hemiplegic; it produces a reeling gait, though the ability to balance itself is usually retained by the animal. Walking in a circle may be noticed when the animal is allowed its freedom, but walking to one side, often with the head held obliquely, is also described. Boring the head into a wall or walking into fixed objects is frequently observed, though those can be avoided by the animal if it desires. The appetite of the animal remains normal, but the method of feeding is unnatural and aimless; the mouth is buried in the food and a large mouthful taken, but the food may remain a long time in the mouth before being swallowed. The animal finally becomes weak, debilitated and comatose, and death follows with or without convulsions.

A comparison with the result of experimental removal of the cerebral hemispheres of birds and mammals is instructive. Here one gets approximate loss of sensation, intelligence, memory, judgment, will, spontaneity, and muscular power.

c.f. Colin's heifer.—It lay in torpor, and if made to move it did so, but bored its head against any fixed object; it retained food unchewed in its mouth, and it showed loss of the above qualities generally, though respiration and digestion were normal.

All these symptoms are seen in hydrocephalus, together with others—aberration of small, sight, hearing and taste—which may be referred to injuries to structures on the floor of the brain.

DIFFERENTIAL DIAGNOSIS.—Diagnosis from cerebral tumour, abscess, etc., is difficult, because a large area of the brain is affected by the pressure and localisation is difficult. The symptoms are not pathognomonic of the disease. The main points are dulness, unnatural position of the head and limbs, blindness, aimless method of feeding, and the absence of fever. These, together with the history of the case, enable one to make at least a tentative diagnosis.

Special methods of diagnosis are:—

(1) Quickly repeated aspiration through a lumbar puncture of small quantities of cerebro-spinal fluid and an injection of equal quantities of air until the fluid ceases to appear on aspiration, produces complete substitution of air for cerebro-spinal fluid in the sub-arachnoid space. If now a good X-ray photo of the parts be taken, any abnormality produced by adhesions, tumours, etc., can be easily seen. (In a normal case so treated air entirely surrounds the cord, sometimes entirely surrounds the cerebellum, and is also seen in the cisterns and sulci.)

Note.—Air injected into the ventricles produces similar results. It can be seen passing via the three foramina on a fluoroscopic screen or photographed in the sub-arachnoid spaces by X-ray.

(2) If inert coloured solution (Phenolsulphonaphthalein) be injected into the lateral ventricles or the fourth ventricle, normally it quickly appears in the fluid from a lumbar puncture. If the aqueduct of Sylvius is occluded, no colour appears when the injection has been made into the lateral ventricles, while if the lateral openings of Luschka and the foramen of Magendie are occluded, no coloured fluid appears even if injected into the fourth ventricle.

COURSE AND PROGNOSIS.—The course of the disease is variable, but the prognosis is always grave. In severe attacks associated with delirium and blindness the animal may live one to three weeks; death in these cases usually occurs from starvation or interference with the vital functions of the medulla. In the most chronic forms the animal may live for years, but unless successfully treated, which is rare, the disease pursues a slow course, with increasingly severe exacerbations.

TREATMENT.—(1) General treatment consists in allowing only slow work or exercise, providing a cool, well-ventilated stall or kennel, and feeding on easily-digested, laxative food in sufficient quantities to maintain the condition of the animal's body and allow the work to be done.

(2) Medicinal treatment recommended is the administration of purgatives, diuretics, and diaphoretics in order to reduce the fluid content of the body.

(3) Surgical treatment may be of various types, but in all cases it should be undertaken early, before irreparable damage has been done to the brain substance.

Ligation of both common carotid arteries (one some weeks after the other) is recorded as having succeeded in restoring the balance normally existing between secretion and absorption of cerebro-spinal fluid.

Puncture of the lateral ventricle sometimes leads to a cure. A quarter-inch trephine circle is removed from the bone of the skull over the ventricle to be tapped, taking care to avoid the sagittal sinus; a trochar and canula is inserted into the ventricle, and an amount of cerebro-spinal fluid withdrawn. This may be repeated at intervals of a week.

Permanent drainage of the lateral ventricle is more likely to lead to lasting results. Remove an inch trephine circle as before, open the dura mater, and then pass a large trochar and canula into the ventricle and allow some of the cerebro-spinal fluid to escape slowly; then place the end of a decalsified bone tube in the ventricle and the other end in the space between the dura mater and the brain; this will establish permanent communication between the cavity of the ventricle and the sub-arachnoid space. Then suture the dura mater and skin, providing drainage if necessary.

Making patent the foramen of Magendie has been recorded as being followed by good results, but the operation is a delicate one.

References.

(1) *Special Pathology and Therapeutics*, Hutyra and Marek.

(2) *A System of Veterinary Medicine*, E. Wallis Hoare; Vol. 2.

(3) *Veterinary Record*, 1st July, 1922.

(4) *Ann. Surg. Phila.*, Vol. 70 (1919); Experimental Hydrocephalus, by W. E. Dandy, pp. 129 to 142 and pp. 397 to 403.

Reports of Three Cases of Chronic Internal Hydrocephalus in the Dog.

All three cases occurred during the last two years in animals brought to the clinique of Sydney University Veterinary School.

(1). Case No. 636/1921, November 8th, 1921. Clinical details of this case were supplied by Mr. I. Clunies Ross, B.V.Sc.

Animal.—Australian terrier dog (about eight months).

History.—The dog had been found as a stray by a member of the S.P.C.A. and had been kept at a dogs' home for two or three weeks when it commenced to show cerebral symptoms. It was then sent to the University Veterinary Hospital to be kept under observation and for treatment.

Examination.—On admission it would walk continuously in circles to the left (counter-clockwise), and showed no appreciation of objects in its path, frequently running into walls, etc. Infrequently the circling took place to the right (clockwise). It took no notice of a normally loud voice, but became temporarily alert when one whistled loudly near its ears. If food was placed where it would come in contact with it, the dog would eat with a good appetite.

Report of Case.—The dog was kept under observation for a week. Defæcation and urination were normal and voluntary. When exhausted it would sleep soundly, but on being disturbed it would recommence walking in circles (generally to the left, but occasionally to the right). Forcible restraint caused the animal to howl in a maniacal manner.

Exploratory Operation.—On November 15th, 1921, the animal was placed under a general anæsthetic and the right cerebral hemisphere exposed by a half inch trephine opening through the parietal region. No fluid under pressure was found in the sub-arachnoid space, but on tapping the lateral ventricle about three-quarters of an ounce of clear straw-coloured fluid flowed out. The opening was enlarged and the interior of the ventricle examined for cysts of parasites, etc., but without result. (Examination of the cerebro-spinal fluid for parasites was also negative.) The dura mater and the skin were sutured and the animal was placed in a cool airy kennel. The dog having showed no improvement after five days was destroyed.

Post-mortem Examination.—Viscera normal; brain and spinal cord:—cerebral hemispheres much dilated; both lateral ventricles tremendously dilated and to an equal degree; roof of the ventricles much thinned, being about one-tenth of an inch thick.

(2). Case No. 286/193, July 9th, 1923.

Animal.—Black pug dog; 4 years; about 15 lbs.

History.—As a pup it had been kicked downstairs, and its shoulder had been injured.

Eight or nine days before admission the dog first became dull and listless; then frequent vomition commenced, and continued till admission. Three days before admission loss of appetite and suppression of defæcation had been noticed, and the dog no longer heeded the voice of his master. The habit of walking aimlessly in a circle to the right (clockwise) had been observed for some days.

Examination.—When left to itself it walked continuously in a circle to the right (clockwise), the circle was a wider one (about three to five yards diameter), and the animal avoided colliding with fixed objects, unless such were suddenly placed in its path.

The dog appeared dull, stupid and sleepy; it did not respond to the voice of its master; the face was old looking and very wrinkled. The head when at rest was fixed and lower than normal. The eyes showed ulceration of the cornea, the pupils responded to light, while vision appeared to be only slightly impaired. The eyelids were usually kept half closed. The temperature was normal, pulse infrequent and soft, and the respirations slightly slower than normal. Skin sensation was somewhat diminished and the anal reflex was normal and the rectum was filled with an accumulation of hard fæcal matter. During the period of the examination urination took place normally. The animal's condition was still good but the owner stated that three weeks before it had been a very fat dog.

Diagnosis.—A tentative diagnosis of *abscess or tumour* in the left cerebral hemisphere pressing also on the right hemisphere or *hydrocephalus internus*.

Report of Case.—*July 9th*, 1923.—Dog given a large dose of a laxative and kept under observation.

July 10th, 1923.—Oily fluid fæces passed and cerebral symptoms appeared somewhat aggravated.

July 11th, 1923.—Eyesight much impaired; dulness more pronounced; skin sensation much diminished. Temperature, pulse and respiration were as at the initial examination. The dog did not go to look for food but would eat when its mouth was dipped into a dish of food, and occasionally vomition occurred. It took no notice of a normally loud voice, but shouting or whistling rendered it temporarily alert only to relapse quickly into its former state. At times it slept peacefully but frequently, when it was not walking round in gradually decreasing circles, it would lie moaning in a maniacal manner. It now made little attempt to avoid objects in its path. If it fell while walking it did so towards the centre of the circle in which it was walking, apparently due to weakness which seemed to be hemiplegic.

July 12th, 1923.—*Exploratory operations*:—

(1). A lumbar puncture was done, but no excessive pressure was found in the cerebro-spinal fluid in the sub-arachnoid space.

(2). Dog was put under a general anæsthetic, and a trephine circle removed from the skull along the line of junction of the left frontal and the left parietal bones.

The dura mater bulged slightly. and on puncturing with a small trochar and canula, blood-tinged, straw-coloured fluid flowed out under considerable pressure. About two ounces of this fluid was allowed to escape and the dura mater then sutured with fine silk and the skin with silkworm gut. and finally the wound sealed with collodion. The fluid on examination was found to be similar to normal cerebro-spinal fluid, and contained a few blood cells (doubtless originating from injury to small vessels during the operation.)

July 13th, 1923.—No improvement in the dog's condition could be observed. and the breathing was becoming somewhat laboured. Forcible feeding with egg and milk was adopted.

July 16th, 1923.—Dulness pronounced; eyesight and hearing apparently lost; sensation very much diminished—flies were allowed to remain on body and face, but pinpricks were still perceived.

July 19th, 1923.—Dog had become comatose and it was decided to destroy it.

Post-mortem.—Body emaciated; abdominal and thoracic organs were apparently normal; brain was examined by the pathologist, Dr. S. Dodd, who reported as follows:—"The exterior of the brain substance appeared normal. The right lateral ventricle was enlarged to about the size of a walnut. The corpus medullare over the region was somewhat thinned, but the cortex appeared normal. The structures on the floor of the ventricle were very prominent. The cavity contained a clear colourless fluid. The left ventricle was normal. No obstruction to the foramina or in the canal could be observed. The choroid plexus appeared normal. The removal of the brain was performed by a student, and unfortunately he did not notice whether any excess of fluid was present under the meninges of the brain and cord or not.

"Hydrocephalus internus of the right lateral ventricle, exciting cause not determined."

(3). Case No. 442/1923, October 10th, 1923. *Animal*.—Black retriever bitch; 12 months.

History.—The owner reported that he had had a succession of deaths amongst his dogs which were kept as pets. Three were males and one other female. The dogs were of different breeds and all had shown symptoms similar to those shown in the present case. The ages at the time of death varied from 12 to 18 months. The history of the present case was that three weeks ago the bitch had begun to lose its appetite, it would pick up and chew any stray foreign body (as small pieces of coke); then constipation set in. Frequently it assumed the characteristic attitude of resting itself on its sternum with the forelegs and elbows on the ground and the head held low, while the hind quarters were held up in the air; when in this position it would howl as though in pain. Vomition occasionally occurred.

Examination.—On admission the above symptoms were observed, and the dog was constantly circling to the left (counter-clockwise), apparently due to hemiplegic weakness. The dog's intelligence did not seem at all diminished and it responded to its owner's calls and to its name. The pulse and respiration were slightly accelerated and the temperature was 103 5°. Abdominal palpatation revealed nothing.

Diagnosis.—No diagnosis could be made, but it was suggested that the condition might be due to worm infestation, a foreign body in the stomach, or to some cerebral condition.

Report of Case.—Shortly after admission the dog just lay in its kennel moaning continuously, and apparently in extreme pain, and a hypodermic injection of morphine was administered.

October 11th, 1923.—All pain seemed to have left the animal, which was otherwise in the same state as when first examined. It was given a soap and water enema and a dose of a laxative administered.

October 12th, 1923.—Temperature, pulse, respiration, appetite, defæcation and urination all normal. On examination the urine was found to be normal and no ova of parasites could be demonstrated in the fæces.

(*Continued at foot of next column.*)

Stray Thoughts.

By R. E. Alexander, M.R.C.V.S. (Liverpool).

The Administration of Medicine.

Years ago, I regret to say, I robbed an orchard. I feasted upon the apples when they were unripe, and later experienced severe pain in the abdominal region. The administration of medicine followed in its natural course. The sole component of my parent's pharmacy was oleum ricini, though I called it something else in those days. It was the certain cure for all childish ailments. just as certain agriculturists regard a red draught a complete cure for all bovine ailments. Mine was disguised in milk and I drank it at my leisure, but the poor cow . . . well! well! Castor oil is useful in canine work, no doubt, but those early experiences of mine withhold me from giving it. The spectacle of an unfortunate quadruped performing circus movements on a lawn and rubbing its nose on the grass is pathetic in the extreme.

Of late years the more widespread use of hypodermic drugs has robbed the administration of medicine of much of its attractiveness to the lay mind. It is not nearly so spectacular. Many of the agricultural community, armed with a drenching horn and a bottle of mixture, will cheerfully withstand the spray of turpentine and linseed oil, etc., with which the expirations of the animal bedews their countenance. The stuff must be put inside the beast somehow, in either the alimentary or respiratory tracts. After

(*Continued from previous column.*)

October 20th, 1923.—As the dog had apparently remained quite normal in every respect for eight days, it was discharged from the hospital.

October 21st, 1923.—The owner reported that the dog took a violent fit after walking for a while rounf the yard in the hot sun (temperature was about 80 degrees in the shade) and died a few minutes afterwards.

Post-mortem.—Internal organs were all normal except the duodenal mucous membrane which showed a catarrhal condition. The stomach was filled with recently ingested food showing that the dog was feeling in good health immediately preceding death. No parasites were found in the alimentary canal. *Brain*.—As the post-mortem examination was not done until about 30 hours after the death of the animal, considerable degeneration of the brain substance had occurred before it was preserved in formalin. However, on examination it could be clearly seen that the left lateral ventricle was considerably enlarged and the structures on the floor of this ventricle very prominent; while the right lateral ventricle was apparently normal. The amount of degeneration which had occurred rendered it impossible to determine accurately the cause of the dilatation of the left ventricle, but it appeared to have been caused by an obstruction to the left foramen of Munro, as the third ventricle, the aqueduct of Sylvius and the fourth ventricle appeared to be normal. From a consid ration of the symptoms during life it seems probable that such obstruction of foramen of Munro was of an intermittent nature.

Note.—It may be a significant fact that in the second and third cases reported in which the hydrocephalus was unilateral, the circling took place towards the side on which the dilatation existed, while in the first case reported which was one of bilateral hydrocephalus, the circling was usually towards one side, but occurred occasionally towards the opposite side.

all, when a man staggers out of a byre saturated with medicine, the patient's saliva, and his own perspiration, he feels he has done something. On the other hand, when he sees the veterinary surgeon walk quietly up to the animal and merely puncture it with a needle, he feels that more could have been done. The owner's face is glum. Shouldn't "Betty" have a drench? And if the veterinary surgeon produces a bottle of noxious fluid compounded in the dark recesses of the surgery, and instructs the owner to give it in a pint of warm ale, how the latter's face lights up with the joy of battle. Away he hurries for the ale and the champagne bottle, and the sick cow eyes the practitioner mournfully, as though she was saying, "I knew it. The old man wouldn't be satisfied with a mere prick of the needle. Not while you have some gentianæ and nux vom. in that aromatic chamber of yours known as the surgery."

The surgeon himself, of course, acquires dexterity in administering drugs by dint of experience. It is a delight to see some men ball a horse. But the most experienced man has his anxious moments. It might be when Lady Angelina brings little Fido to have a pill. She must see the operation performed in her presence, as Fido is highly nervous, and "mind he doesn't snap at you, because he hates strangers." The pill is accordingly placed at the back of Fido's throat, not without personal danger, and a well-behaved muscular œsophagus should conduct it to the cardiac region. But no one can hold Fido's jaw closed for ten minutes, and on examination the pill rolls out, rather sticky and minus the sugar lining. One could swear, save for the presence of Lady Angelina aforesaid. She hasn't stopped at my door yet, but when she does come, that pill goes down Fido at all costs. One must keep aristocratic clients, and so Fido must get outside the therapeutic sphere. (Rather a neat term for a pill.)

Then, of course, we have the stomach tube. Once the tube is inserted it is a mere matter of pumping. Rather similar to inflating a motor tyre. The difficulty is getting the animal to swallow the tube. Sometimes it goes easily; sometimes not. A good-natured horse, however, should always be able to oblige, and it was rather a brainy veterinarian who suggested that a whistle should be placed at the free end so that, if the tube entered the trachea by mistake, the air blowing the whistle would serve as a warning.

Those privileged members of our profession who attend the various zoological gardens apparently dose elephants and hippos by drugs cunningly concealed in oranges. Personally, I should give a hippo his condition powders in a melon or vegetable marrow, while for small rodents I should use a grape. I do not know how they manage with the larger carnivora, but I take it the safest procedure is to keep on the opposite side of the bars.

The Veterinary Surgeon in Fiction.

I am not an omnivorous reader, nor have I sought particularly for the adventures of veterinary surgeons in the realms of fiction, but it struck me as an interesting fact that while many books deal with doctors, few deal with veterinary surgeons. I remember an exceedingly interesting book in which the hero was a medical man, dealing with his boyhood, studentship, and career as a practitioner. A similar novel about a veterinary man would be just as interesting, and I wish I could write it. Hitherto the few veterinarians I have met in books have not appeared in a very favourable light. They are usually rough, coarse of speech, and inclined to be villainous. I think one such gentleman appears in a story by Pett Ridge. He drives about in a trap, makes love to the heroine in a very barefaced manner, and "looks upon the wine while it is red." I recollect Thackeray mentions an Irish veterinary surgeon, but I do not know whether he states his characteristics. But I remember an American writer who was kinder. The "horse doctor" was here the hero—a good-looking and modest young man. But the girl he loves is swept off her feet by the impetuous and practised wooing of a commercial traveller from New York. Although the latter, however, is outwardly a gentleman, his intentions are not as good as his manners. He is revealed in his true colours, and the maiden returns to the arms of her veterinary lover.

The veterinarian is more common in Russian fiction. Anton Chekhov writes about a young army veterinary surgeon named Sinerdin. This gentleman was unlucky, for his wife deceived him. He is quite up-to-date in expressing views as to the proper control of milk, which he considers is inadequate. Another story by this writer concerns a veterinary surgeon named Ivan Ivanitch. (One could make a good pun on the surname.) He seems to be a philosopher. He has another name also—"Chimsha Gimalaisky." We are not told whether he maintained a brass plate in front of his house, but such a name would look impressive.

No! we do not inspire the fiction writers. Possibly there is an absence of romance; and yet there is no typical veterinary surgeon. I dare say I have come in contact with about one hundred and fifty veterinarians at one time or another; only one looked what might be called a typical specimen.

There is a great novel waiting to be written; an epic of Johnny Jones, his boyhood, his struggles with anatomy at college; how he gains experience with a practitioner during the vacation. The latter has a beautiful daughter. Johnny, in the intervals between calving cows and dusting bottles in the surgery, falls in love with her—because she is very nice, and when she comes into the shoeing forge attached to the premises, she is like a ray of sunshine, and the grimy smiths think the world of her. Johnny passes his final. He has a riotous night to celebrate the event. Then we get his early struggles in practice. He plods on, marries the veterinary surgeon's daughter, and becomes a leading light. He publishes a textbook that is a success, and finally ends by being president of the R.C.V.S.

All that is wanted is a pen and plenty of paper. Who will oblige?

Castrate Standing.

"M.R.C.V.S. desires Assistantship. Drive car. Castrate standing. Reply V.R. 000."

This is not an uncommon form of advertisement. Yet it seems to me hardly professional. Granted that speed is essential in the castration season, that much dexterity is frequently required, yet it seems bizarre wedged between the ability to drive a motor cycle and the fact that a moderate salary is required as it frequently is. Suppose it were to lead to "sarcomas removed swiftly, colic cases comfortably cured, quittors quietly queered, neurectomy standing, kneeling, or sitting in an armchair." It is turning a profession into a business. Castration is becoming like shorthand and typewriting. The professional man must be a business man by all means, though the majority are not. But the automatic ability to perform one operation in particular does not lead to the advancement of science.

What a lot has been written about castration! Each method has its followers. One man sticks to his clams and another to his cautery. And quite right. I remember the discussion cropping up amongst a gathering of veterinary men, and all agreed that the main factor was confidence. Once a man discovers that an ecraseur does his work for him, he remains faithful to his ecraseur, and would tackle anything from a white mouse to an elephant.

And so to castrate standing all that is required is—confidence. One surgeon who works by this method alone rarely has a mishap. A twitch is the only form of restraint that he uses. Quietly he performs his operation, and there are rarely any acrobatics. It looks dead easy.

Another makes use of several ropes, and has about a dozen men running about. He makes Sanger's circus look sick in comparison. He is a brave man. He carries his life in his hands, and hasn't signed the *Daily Mail* insurance. He just wants—confidence.

This quality it is that makes the successful veterinarian. The confident man, tempered with reason, of course, and not proclaiming his diagnosis before he has entered the door, can handle his animal better, and inspires trust in his client. If the animal dies he is not blamed; it was the animal's fault. With a hesitant man it might be the other way about.

So why advertise "castrate standing"? Why not put "confident and trustworthy"? That stands for castrate standing, tuberculin testing, obstetrics, and everything else mentioned in the works of Professor Wooldridge and Mr. Dollar. And more than that, it includes the things that they have not referred to—the operations without precedent and the diseases without a name.

Royal College of Veterinary Surgeons.

Obituary.

Lanzillotti-Buonsanti, Dr. Nicola, died on 28th April, 1924, at Bergamo, Italy. He was born in 1846, studied Veterinary Science at Naples from 1865-69, and went to Milan in 1871 as Professor of Veterinary Surgery. Later he became Director of the School, and remained at its head until his retirement a few years ago, due to failing eyesight. He was elected an Honorary Associate of the R.C.V.S. in 1880.

Blackwood, John Gray, Downpatrick, Co. Down. Graduated Edinburgh 22nd May, 1897. Died 5th May, 1924, aged 70 years.

The National Dairy Council for Scotland.

Mr. Begg's Protest.

The following letter from Mr. Hugh Begg, of Hamilton, appeared in the *Scottish Farmer* of May 31st:—

Sir,—I feel sure that it must have struck many who attended the conference held in the City Chambers yesterday as a remarkable circumstance that throughout the whole of the speeches made by the nominated gentlemen the word "veterinary" was never mentioned.

Presumably the speeches of Sir Robert Greig, Dr. Orr, Professor Simpson, Dr. Leighton and Dr. M'Kenzie's assistant, who were the first gentlemen called by the chair, were intended to be a more or less complete portrayal of the reasons for setting up the National Dairy Council, of the work it was expected to accomplish, and the various types of people who would be engaged in it.

Dr. Orr in set terms referred to the specific services that would be required, and having failed to mention the veterinary inspector in any connection whatever, need you wonder that many of his hearers were overwhelmed with amazement. That they should, one and all, have omitted to pay the slightest tribute to "the first line of defence" between the tuberculous or the unkempt cow and the consumer of milk struck one as astounding and not easily excusable.

At an after-meeting interview it is true that more than one of the gentlemen referred to gave assurance that the manuscripts of their speeches did make proper reference to the need for the veterinary inspector, but that they had inadvertently omitted to mention the matter.

Professor Glaister's opportune and successful call for an amendment of the first resolution to ensure that a member of the veterinary profession would be included on the provisional committee served to disclose the situation.

Perhaps the speeches when printed will be according to the manuscript rather than the spoken word, and so make good, for readers at least, the omission referred to. Nevertheless, the large audience know only the spoken word, and must have gone away unaware of what the manuscripts contained. Moreover, although it was evident that the motions submitted to the meeting were prepared beforehand by responsible individuals, it required the timely intervention of Professor Glaister's amendment to undo the identical omission in the first motion that was so manifest in the speeches delivered. Surely the proper enunciation of a scheme need not be incompatible with a fitting discretion which will put a slight on no one.

Perhaps I may be deemed over-jealous of the rights of the profession to which I belong, but such remissness on the part of highly placed medical men is altogether too disconcerting, and as President of the West of Scotland Division of the National Veterinary Medical Association, and as one who has spent a large portion of his time for very many years in the veterinary inspection of dairy herds in Lanarkshire, it was incumbent that I should further

reveal the impression left by the gentlemen who spoke. If other counties in Scotland had emulated the example of Lanarkshire where the annual veterinary inspection of dairy herds was inaugurated with remarkable foresight by Dr. John T. Wilson, Medical Officer of Health, twenty years ago under the Dairies, Cowsheds, and Milkshops Orders of 1885 and 1889, the need for a National Dairy Council in Scotland would not be so urgent as it is to-day.

I need not say that we veterinary inspectors who are daily engaged and who hope to be engaged in greater number in the future in rooting out cows that yield tuberculous milk and the preaching of the gospel of clean milk production in terms understandable by farmers, will not fail in whatever is assigned to us in the campaign that is about to be undertaken.—Yours, etc., HUGH BEGG, F.R.C.V.S., County and District Veterinary Inspector for Lanarkshire. President of the West of Scotland Division of the National Veterinary Medical Association.

County Offices, Hamilton,

28th May, 1924.

REGENT'S PARK PARADE.

The cart horse parade in Regent's Park, on Whit Monday, was, says *The Times*, a popular and successful event. The procession of animals and vehicles was four miles long, and the number of entries—986 horses and 869 vehicles—was greater than at most of the recent parades. The parade was the fifth since the war and the 34th since the inauguration of the competition. The class for novices again proved attractive. It is open to firms who have not previously competed, and the entries numbered 75.

Competitors presented themselves at 8 o'clock at one or other of the entrances to the park, and drew up within the outer circle, where a preliminary examination was made by veterinary surgeons, whose task it was to reject those horses which were unsound or dirty or too light to be properly classed as cart horses. The judging began at 9 o'clock, and continued until the afternoon. Most of the animals were in fine condition, and nearly every cart had its full complement of cheering children.

Among the awards were over 40 cash prizes to drivers of long service and good character, all of whom have been not less than 25 years in the continuous service of the same firm.

The annual luncheon was presided over by the president, Sir Walter Gilbey, who made a strong protest against the agitation for the abolition of horse transport from the streets of London. The horse, he said, was an absolute necessity, and was essential to the trade of London and of the country. There never was a greater falsehood than the statement that the horse was the cause of the congestion of the streets of London. Those who were asking for the abolition of the horse did not realize what an enormous amount of injury would be done to the small traders. Motor and horse traffic were both necessary, and both must continue to exist unless trade was to be interfered with.

The Veterinary Record.

14th June, 1924.

DIAGNOSIS AND TREATMENT.

The aim of every practitioner of veterinary medicine and surgery may be taken to be the successful handling of his cases, so that not only may his patient make a quick and sure recovery to normal health, but also that his client may be satisfied and gain confidence in his skill and ability. In fact, his desire must always be to build up for himself a reputation and subsequently to enhance it. A reputation may be founded upon manner and address to a certain degree, but if it is to be lasting and unaffected by mischance, it must have its root in the sure ground of success. The desire for success is evidenced by the keen interest that is shown by every practitioner in methods of treatment, in the value of new instruments and drugs, and their applicability to the class of case with which he has to deal. On many occasions one has heard regret expressed at meetings that systems of treatment have not been more fully explained by the contributors of papers, and one knows that great value is attached to certain prescriptions. Perhaps it is not so marked now as in former years, but amongst certain practitioners a man who had a facile way of writing suitable prescriptions for various ailments was looked up to with veneration as being specially skilled, and his prescriptions were carefully kept for future use when a case was seen upon which they might be tried. It is to some extent to this trait in every individual—the veneration for the ancient mystery of physic and the ingrained love of dosing that the popularity of patent medicines is due.

But surely it is more than time that this side of our calling ceased to make itself unduly observed. Therapeutics, both as a science and in practice, no doubt needs increased study on the part of all of us. We would not for one moment minimize its profound importance; nevertheless, we must not let it be based upon empiricism. Success in treatment must come from an intelligent appreciation of the symptoms and cause of the morbid processes with which we have to deal. Here, then, we may emphasize the fact that too much attention and scrupulous care cannot be given to the study of symptoms and *diagnosis*. To endeavour treatment without a satisfactory diagnosis is merely a shot at a venture, and as a habit is unscientific, and is not worthy of a professional man. Diagnosis, of course, is not always possible

in our present state of imperfect knowledge, but repeated failures connote not only ignorance, but a state of scientific and professional apathy. It is all important, then, that we should at every opportunity concentrate upon perfecting our powers of diagnosis. As a profession we are trained to keen observation, it remains for us to put a correct interpretation upon what we see. Few symptoms escape our notice; we must improve our power of allotting to each its due proportion of importance. One of the greatest aids that we can have in this direction is the reading of good papers on diagnosis at the meetings of our local societies. The value of such papers is enormous, and far outweighs the value of papers or discussions on treatment. Treatment is not absolute, it will vary in some measure with every generation, is influenced by fashion; it is more or less transient. But in perfecting our power of diagnosis we are searching for the absolute—for Truth. It is Truth we wish to disclose for the benefit of all time.

CLINICAL AND CASE REPORTS.

Sclerostomes as a Cause of "Debility" in Army Horses.

By G. F. Steevenson, M.R.C.V.S., Capt. R.A.V.C.

The object of these notes is to suggest that sclerostomes, including *Cyastnostomum tetracanthum*, are a more common cause of poor condition without any obvious cause in horses and mules, than is generally believed to be the case.

It is well known that these parasites are present in the intestines of the majority of horses, but the difficulty is to form an idea as to when they are sufficiently numerous to cause pathological effects and loss of condition. Hutyra and Marek[1] (whose nomenclature is adopted in these notes) state that *mature* worms of *S. equinum* and *S. vulgare* do not cause any disturbance of health. Albrecht[3] states that the fæces of 42 horses of 44 examined showed eggs of sclerostomes, and one's own experience is that 95 per cent. or more of horses harbour these parasites, as shown by microscopical examination of fæces. (This remark also applies to horses in India.)

Hutyra and Marek[1] also state that *S. edentatum* was present in 42 per cent. of 426 horses examined, and *C. tetracanthum* in 25 per cent. The writer has found the latter to be present in a higher percentage of cases than this. It will be seen from this that the mere detection of the eggs of these parasites in fæces is not sufficient to enable one to form an opinion as to whether they are the cause of an animal's poor condition or not. The demonstration of larvæ by Albrecht's[2] method (keeping a ball of fæces moist for a few days, then adding clean water or normal saline solution until the fæcal ball is saturated and some water remains in the bottom of the dish, into which the larvæ migrate and can be seen either with a hand lens or microscope) also does not give sufficient information as to the *degree* of infestation, though it does aid in the diagnosis of the species of parasite present.

In the *Journal of Comparative Pathology and Therapeutics*, Vol. XXX., Part 2 (June, 1923), there was published an article by A. L. Sheather, B.Sc., M.R.C.V.S.,[3] in which it was mentioned that fæces of several species of animals had been examined for the presence of worm eggs, including those of cattle, and the horse, sheep and dog.

The method described by Sheather for the detection of worm eggs has the advantage that by it an idea of the comparative *degree* of infestation can be formed, and one is therefore much better able to form an opinion as to whether the parasites are the cause of an animal's poor condition or not. The writer's intention is to suggest that if an animal (horse or mule) is in thin condition and the fæces of that animal indicate (by the presence of numerous worm eggs) that there are more parasites in its intestines than in a normal animal, then the parasites in question may be at least partly the cause of the thin condition.

Sheather, in the above quoted article, first summarises the efforts of various workers to elaborate a satisfactory technique for the detection of worm eggs in fæces, and points out that, generally speaking, all the methods devised have been based on the application of two main principles, viz., sedimentation and flotation. It is the latter on which the method he describes is based and to which it is desired to draw attention.

Briefly, the method consists of centrifuging a strained emulsion of the fæces, in a solution of sugar of such specific gravity that the eggs of the parasites come to the surface of the fluid in the centrifuge tube, whence they can be removed and counted, while the débris is thrown to the bottom of the tube. The eggs are thus obtained in a practically clean condition. The technique which has been adopted is based on this, and is as follows:—

1. Thirty grains of the fresh fæces it is desired to examine are weighed out and emulsified in about 16 c.c. of clean water.

2. The mixture is strained through a piece of wire gauze having 30 meshes to the linear inch.

3. The "filtrate" is divided between two centrifuge tubes and to each tube an equal volume of sugar solution is added. The sugar solution is prepared by dissolving 1lb. of sugar in 15ozs. of water.

4. The tubes are then centrifuged for two minutes at about 2,000 revolutions per minute in a hand centrifuge.

5. A piece of plasticene, drawn out into the shape of a pencil with a blunt end, is bent at right angles and pressed on to a cover glass which has a diameter slightly less than the internal diameter of the centrifuge tube. The cover glass is then lifted and lowered into the tube until its under surface is entirely in contact with the liquid in the tube. It is then lifted

out, tilting slightly, and detached from the plasticene on to a slide. The eggs adhere to the cover glass and are lifted out with it.

6. It is then examined with the microscope, using a low power and counting the number of eggs in each field until all the preparation has been examined, *i.e.*, about eight fields.

It is not claimed that all the eggs on the surface of the liquid in the tubes are removed on the cover glass, for as Sheather points out, the entire surface of the liquid is not touched by the glass, there being a small margin round the edge of the slip. He also observes that "a second cover glass lowered on to the surface will as a rule gather some eggs, but unless immense numbers are present they will be far fewer than those adhering to the first, and in the majority of cases the eggs are not evenly distributed in the preparations." This was also found to be the case in the writer's observations, and for this reason two preparations were made from each sample of fæces so that more fields could be counted. Sheather further says, "These points are not of importance from a practical point of view, for, as has already been explained, the problem which presents itself to the veterinary surgeon is whether evidence can be obtained that any animal is more severely infested with worms than animals in apparently good health usually are," and he states that experience has shown that the number obtained from any given animal is constant within fairly wide limits from day to day.

In the cases recorded on the appended tables, two preparations have been made from each case, eight fields of the microscope counted in each, and an average number obtained, *e.g.*:—In case No. 1, Table 2, sixteen fields were counted and an average of nine eggs per field was found.

TABLE 1.

Date.	Age.	Class of Animal.	Condition.	No. of eggs per field.	Nature of parasite.
25/1/24	10	L.D.	Good	0·8	Sclerostomes
25/1/24	12	L.D.	Good	1 (approx.)	,,
25/1/24	7	L.D.	Good	1 (approx.)	,,
11/4/24	11	L.D.	Good	1 (approx.)	,,
11/4/24	4	L.D.	Good	3 (approx.)	,,
11/4/24	14	L.D.	Good	1 (approx.)	,,
11/4/24	14	L.D.	Good	2 (approx.)	,,
11/4/24	4	Pack Mule	Good	2 (approx.)	,,
23/4/24	13	Rider	Good	·75 per field	,,
23/4/24	7	Rider	Good	4·8 per field	,,
23/4/24	6	L.D.	Good	3·4 per field	,,
23/4/24	6	L.D.	Good	3·0 per field	,,
23/4/24	11	Rider	Good	·25 per field	,,
23/4/24	13	Rider	Good	·5 per field	,,

TABLE 2.

Case No.	Date.	Age.	Class of Animal.	Condition and Symptoms.	No. of eggs per field.	Nature of parasite.	No. of eggs after treatment.	Remarks.
1	15/1/24	13	Rider	Poor for some months in spite of extra food.	9	Sclerostomes	Nil after 15 days.	Since left station. Treated. Case 1, Table 3.
2	6/2/24	13	L.D.	Poor, staring coat and tires easily.	8	Sclerostomes and Ascaris meg. (2 per field).	Nil in 16 fields 80 days after.	Treated. Case 2, Table 3.
3	29/1/24	8	Pte. Chgr.	Very poor in spite of special feeding.	6·5	Sclerostomes.	2 in 16 fields after 12 days.	Treated. Case 3, Table 3.
4	16/2/24	—	Rider	Poor.	1 in two preparations	Sclerostomes.	—	Not treated.
5	1/3/24	—	L.D.	Poor.	2	Sclerostomes.	—	Not treated.
6	5/3/24	5	Pack Mule	Very Poor.	8	Sclerostomes and Ascaris meg. (1 per field).	Nil 14 days after. Nil 52 days after.	Treated. Case 6, Table 3.
7	1/3/24	7	L.D.	Very Poor.	8	Sclerostomes and Ascaris Meg. (2 per field).	Nil 40 days after.	Treated. Case 7, Table 3
8	1/3/24	6	L.D.	Poor.	5	Sclerostomes.	1 Ascaris egg in two preparations 40 days after.	Treated. Case 8, Table 3.
9	7/3/24	—	L.D.	Poor.	5	Sclerostomes.	—	Not treated.
10	18/3/24	—	L.D.	Poor.	5	Sclerostomes.	—	Not treated.
11	18/3/24	—	L.D.	Poor.	1	Sclerostomes.	—	Not treated.
12	21/3/24	6	L.D.	Poor.	5	Sclerostomes.	Not examined.	Treated. Case 12, Table 3.
13	20/3/24	—	L.D.	Poor.	2	Sclerostomes.	—	Not treated.
14	6/3/24	8	Charger.	Very poor, hide bound.	8	Sclerostomes.	Not examined.	Treated. Case 14, Table 3.

TABLE 3.

Case No. from Table 2.	Treatment given.	Remarks.
1	36 hours starvation followed by ½oz. Oleum Chenopodii in 4ozs. Oleum Lini, followed by 2ozs. Oleum Terebinth in two pints Oleum Lini two hours later.	Condition improved much after three weeks and since maintained. Large numbers of *C. tetracanthum* and *S. edentatum* were passed.
2	Same as Case No. 1.	In fair condition after three weeks and had gained a good deal of weight. Since improved further and now in good condition, with shining coat.
3	Same as Cases Nos. 1 and 2.	Condition much improved.
4	36 hours starvation followed by 2ozs. Oleum Tereb. in 1 pint Oleum Lini, and same dose repeated after two hours.	Now considerably improved and in very fair condition (1/5/24).
7	36 hours starvation followed by 1½ozs. Oleum Tereb. in 1 pint Oleum Lini, and same dose repeated after two hours.	Improvement very marked after three weeks. Was in poor condition and is now fat (26/1/24).
8	Same as Case No. 7.	In very poor condition before treatment. Has improved very much and is now in good order. (N.B.—These are the two cases, 7 and 8, I had so much trouble with).
12	Same as Cases Nos. 7 and 8.	Before treatment was in poor condition and had been so for some months. Improved slowly and was in fair condition after three weeks, and had gained a good deal of weight. Since returned to unit has continued to improve and is now in good condition.
14	Same as Cases Nos. 7, 8 and 12.	Improved slowly and improvement maintained since returned to unit. Condition now fair (1/5/24).

The advantage of this method is that it gives comparative results, as it is a fair assumption that if a large number of worm eggs is found in one case and a smaller number in another, the animal showing the greater number of eggs in its fæces harbours more parasites than that showing the smaller number. No attempt has been made to distinguish between the eggs of the three species of sclerostomes, but the eggs of *C. tetracanthum* are longer and oval, and fairly easily distinguished. Ova of ascarides will also often be found in preparations made in this way.

A sufficient number of samples of fæces has not been examined to enable definite figures to be given, but a reference to the appended tables suggests that an opinion can be formed by comparing the results of the examination of fæces taken from animals in good condition with those taken from animals in poor condition. The results of the treatment also support this.

Fourteen animals in good condition were picked out and their fæces examined for the presence of worm eggs, and the results are given in Table 1. A reference to this will show that the average number of eggs per field in these cases varies from less than one to three, being generally nearer one.

The results of the examination of fæces taken from animals in poor condition are shown in Table 2, and it will be seen that the average number per field varies from two to nine. It is suggested that in those cases showing the higher numbers, sclerostomes are at least partially the cause of the thin condition.

The practice in cases here recorded has been to treat those cases showing an average number of five eggs per field and over, and the results of treatment have been very encouraging.

Table 3 shows the treatment adopted and its results. It has not been possible to give the actual gain in weight of the cases treated, but the improvement in condition has usually been very marked. Cases Nos. 3, 5, 7, 8, 9, 10, 11, 12, 13 and 14 were in charge of Captain E. Wallace, R.A.V.C., at Larkhill Camp, and the results in the cases of those he treated are given in his own words in Column 3 of Table 3.

These notes may be summarised as follows:—

1. Sclerostomes appear to be present in the intestines of 95 to 100 per cent. of horses and mules in the Army.

2. The mere diagnosis of their presence is therefore not of much value in forming an opinion as to whether they are exerting pathological effects or not.

3. The method described gives an idea of the *degree* of infestation and is therefore of value in this respect.

4. Many of the animals in thin condition do show a higher *degree* of infestation with worm parasites than those in good condition, and the results of treatment based on this are very encouraging.

References.

1. Special Pathology and Therapeutics of the Diseases of Domestic Animals, Hutyra and Marek (1920), Second Edition, Vol. 2.

2. The Development of Sclerostomes in Horses—Diagnosis, Prophylaxis and Treatment, Dr. A. Albrecht, *The Veterinary Journal* (1916 ?). (The actual number of *The Veterinary Journal* has not been traced.)

3. The Detection of Worm Eggs in the Fæces of Animals, and some Experiments in the Treatment of Parasitic Gastritis in Cattle, A, L. Sheather, B.Sc., M.R.C.V.S., *The Journal of Comparative Pathology and Therapeutics*, Vol. XXX., Part 2 (June, 1923).

The Etiology of "Udder Staggers," commonly called "Milk Fever," in Cows.

By J. Donaldson Pettie, M.R.C.V.S., Greenock.

In continuation of my former article, which appeared in the *Veterinary Record* of March 8th, 1924, on the above subject, I will deal with a few more observations which I have made concerning this disease. As all veterinary observers must be classed as research workers, their ideas also must be considered when writing about animal diseases, and it will be interesting to learn of them through the columns of any of the veterinary papers. "So many men, many minds." In my last article I attempted, as far as a short clinical article would permit me, to show some of the resemblances and also some of the differences between "stomach staggers" and "milk fever," or "milk staggers" in cows. My reasons for so doing are that the treatment for "milk staggers" by (1) inflation of the udder or (2) udder fluid injections (medicinal) answers for the treatment for "stomach staggers" as well as for "milk fever," even in very severe and serious cases of "stomach staggers" in cows. This seems strange, but it has been well tried and tested, and found to be the correct treatment to adopt. My own theory is that the external pressure of air, or (in the case of liquids) the fluid pressure externally in cases of udder staggers counterbalances the internal blood or internal fluid pressure on the udder or mammary gland, thus relieving the udder and its nerves and blood vessels, and allowing it to perform its natural function—that of milk secretion, thereby also drawing the blood from the brain and spinal cord and relieving the secondary blood pressure there, with its concomitant coma and paralysis, etc., etc. In the case of "stomach staggers," the external pressure on the udder (either by gaseous or liquid injection, as the case may be) relieves the blood pressure on the brain and spinal cord by the drawing of the excessive blood from the brain and nerve centres to the udder. I believe that internal pressure on the stomach or stomachs of cattle suffering from "stomach staggers," if that were possible, would have a like and beneficial effect (in all such cases). The nearest approach to this desirable treatment is the removal of the gaseous solid or liquid causing pressure on contents of the stomach or stomachs. by the employment of the stomach tube or by rumenotomy, or by puncture of the rumen in tympanites. I do not claim, with Dr. Schmidt, any credit for discovering the inflation of the udder by gases or medicinal liquids, but I do claim merit for the fact that I was, at the same time as Dr. Schmidt, working at the same problem as he was in his own country. I like to give honour to whom honour is due in the making of such fine discoveries as Dr. Schmidt has done to the benefit of the veterinary profession and to stockowners by his successful treatment of "milk staggers" or "milk fever." I also would like to record my high appreciation of Mr. F. T. Harvey, F.R.C.V.S., of St. Columb, for his very able paper on the same disease. It is extremely thoughtful and clear, and really caused me to write my scattered views on this subject. There are many other veterinary surgeons who could have done the same had they chosen to do so, I am quite certain. I do not think any useful purpose would be served by enlarging further on the etiology history of "udder staggers" or "udder hyperæmia"—not anæmia, as far as I can make out, and not blood poisoning, owing to the rapid recoveries in such cases. I would simply further say that all veterinary surgeons have their own methods of treating this and other diseases of animals, as no two cases are exactly alike. I repeat what I stated in my previous article—that "udder staggers" has its seat in the udder and "stomach staggers" has its seat in the stomach or stomachs of bovines primarily, and that both diseases secondarily affect the brain and spinal cord and their circulation, but more especially the medulla oblongata or centre of movement in cattle, causing the cranial symptoms and often apoplexy in the brain or effusions on to the cranial surface or spinal cord. "Udder staggers" is a disease of the milkiest type of cows, and occurs at their highest period of milk production. Heavy feeding with milk-producing foods at or near calving, or immediately after calving, are the exciting causes of this disease. The reason that we have fewer cases is that cattle owners are not feeding at the highest pressure and not forcing the milk production at calving or after calving, as they used to do, and have become more careful in every respect to prevent this disease. A good text book on bovine physiology and bovine or cattle pathology is required by the veterinary profession—well written, practical and with all prescriptions written, both in Latin and technically terminology. Inflation of the udder and medicinal injections in cases of "udder staggers" can be repeated twice or three times with the best results, and, if professionally done, with no ill effects or sequelæ. The contents of the stomachs, milk, urine and blood are all highly acid in their reactions, as I have tested them repeatedly in milk fever, due to the presence in the blood and parts enumerated of carbonic acid. The treatments and *post-mortem* appearances of carcases of animals which have died of "udder staggers" I will leave to other writers, also the complications and sequelæ for future articles on this subject.

Necrotic Stomatitis in Sucking Pigs.

By T. F. Prime, M.R.C.V.S., Upper Norwood.

In the report of the Ontario Veterinary College for 1923—which, by the way, is very interesting, and includes reports on roup and canker, also chicken-pox, in poultry—there is one on necrotic stomatitis in sucking pigs. Recently I have had to do with two outbreaks of this in England, the symptoms being that greyish-brown sores develop on the gums, tongue, cheeks and snouth; the piglings being about two or three weeks old, they rapidly become emaciated,

(*Continued in first column of next page.*)

ABSTRACTS AND REVIEWS.

Veterinary Materia and Therapeutics (Wallis Hoare),

Fourth Edition. Edited and revised by J. Russell Greig, M.R.C.V.S., Professor of Veterinary Medicine, Royal (Dick) Veterinary College. Baillière, Tindall and Cox, 21s. net.

A fourth edition of this well-known book has now made its appearance, and the Editor is to be congratulated on having augmented its contents and increased its value, both as regards a textbook for students and as a work of reference to the practitioner.

Several new features have been introduced and the special articles have been revised. Particularly good are the articles on the care and management of sick animals. It is seldom that in any veterinary textbook one finds sufficient space allotted to this subject, and the articles may be commended strongly to the notice of every veterinary student.

A generous and well-selected bibliography of both medical and veterinary literature has enabled the Editor to bring much of the subject matter of therapeutics up-to-date, as regards our present knowledge, but it is somewhat surprising to find the actions and uses of the coal tar derivatives dismissed in a cursory manner, considering the great extent to which these preparations are used to-day.

In view of the increasing use of Collosal preparations, especially in canine practice, one would have wished for a more detailed survey than is the case.

That part of the book devoted to Special Therapeutics is excellent, and an attractive list of formulæ is contained within the text. Many of these latter are newly introduced, and will be much appreciated by the practitioner.

The Editor has completed a difficult task in an able manner, and the new material introduced has considerably enhanced the value and scope of the book.—H. W. D.

Agricultural Tribunal of Investigation—Final Report

The Agricultural Tribunal, consisting of Professor W. G. S. Adams, Sir William Ashley and Professor D. H. MacGregor, with Mr. C. S. Orwin as Agricultural Assessor and Mr. D. B. Toye as Secretary, has now issued its Final Report. The terms of reference to the Tribunal were as follows:—"To enquire into the methods which have been adopted in other countries during the last fifty years, to increase the prosperity of agriculture and to secure the fullest possible use of the land for the production of food and the employment of labour at a living wage, and to advise as to the methods by which those results can be achieved in this country." Two interim reports have been issued on 29th March, 1923, and 10th November, 1923, respectively.

The final report comprises two reports: one of Professor Adams and Sir William Ashley, and the other of Professor MacGregor. The Tribunal point out in their covering letter that while in some matters the two reports represent different points of view, they should also be regarded largely as supplementary one to the other, each report treating certain aspects of the problem more fully than the other.

Report of Professor Adams and Sir William Ashley.

In comparing British with foreign agriculture the report draws attention to the remarkable decline which has taken place in this country in the last fifty years in cereal crops and in roots. In foreign countries there has been on the whole an increase in the arable areas; at least it has been maintained. With regard to employment in agriculture, there has been a relative decline in agricultural employment in all countries, and in Great Britain the absolute decline has been greater than in other European countries. The wages of agricultural labour in Great Britain were before the war, and still are, higher than in most European countries. The members of the Tribunal do not consider, however, that the better position of the agricultural worker in this country is any argument against the re-establishment of Wages Boards; in fact they state that it is only by increasing the wages of agricultural labourers and improving their housing conditions that it will be possible to stop the rural migration, whether to the towns or to the colonies. They therefore recommend that District Wages Committees should be instituted on the lines recommended in the first interim report, and that consideration should be given to the possibility of making special grants in aid of the housing of agricultural workers.

With regard to tenure, it is suggested that the Government should institute an enquiry into the possibility of the extension of the "Evesham custom" to all agricultural tenancies.

The report also makes recommendations as to the extension of small holdings and considers the subject of tariffs, education and research, costings and co-operation. On the last subject a striking fact is the universality of the movement and its phenomenal growth within a comparatively short period of time. The general characteristic of the movement is that there has been in its origin and retained throughout its growth an idealism which has given to it more than one economic impulse. Further, the movement has been essentially in its origin a voluntary or self-help movement. Nothing stands out more markedly in a comparison of British and foreign agriculture than the backwardness of co-operation in this country. It is true that in distant countries relying on export to foreign markets a special incentive is upon the farmer to co-operate, but this will not account for the backwardness of England. The report recommends that the Government should

(*Continued from previous page.*)

and despite dressings and treatment die. One or two in the litter were not affected. The lesions showed the characteristic necrotic centre. One was sent to a bacteriological laboratory in the north of England, and cultivations were made. Several more or less innocent bacilli were present, but not those of *Bacillary necrosis*. Amongst those noticed in the cultivation was one of a diphtheroid character which was not a recognised bacillus, and no name could be given it. Swine fever bacilli were absent.

continue to provide funds for propaganda in aid of co-operation.

With respect to credit, it is recommended that Farm Loan Boards should be established, enjoying defined autonomy up to prescribed financial limits, and that these Boards should be the authority responsible for assistance to co-operative societies within their district.

Other recommendations cover co-operative insurance, administrative organisation and the Councils of Agriculture, and experiments in arable stock farming.

Report of Professor Mac Gregor.

This report observes that there is no ground for depreciation of British agriculture as a whole, in view especially of the great development of our manufactures. British agriculture does not suffer by an international comparison of existing efficiencies with respect to either (a) the actual produce of the soil, or (b) the level of wages paid. The fundamental difference between British and foreign agriculture is not the efficiency but the size of this industry in relation to all industries. Lines of agricultural policy which might be pursued are then indicated.

The maintenance of arable cultivation will increase the opportunity of employment in agriculture, but its expense could not be justified on this ground alone, but only by exigences of defence. If the Government is not advised that there is an exigency which justifies a heavy annual charge in favour of arable farming the whole argument disappears.

The experience of European countries with a national economy similar to our own, shows the difficulty of maintaining agricultural employment even where strong measures of protection are added on to a system of high organisation. But if we accept the estimate that arable land may fall in ten to twelve million acres, from its present level of 13½ million, the agricultural industry may then decline to a million men, instead of the present figure of 1¼ millions. It can, at the same time, be more fully organised, increase its technical efficiency, give fuller opportunity to the labourer, and be financially prosperous. It may nevertheless reach the position indicated, because of the nature of our national economy and our international exchanges. Is the mere possibility of a decline to a million men and between 30 and 40 per cent. of arable land already so serious that the gradient should be lessened *now* at the cost of a battleship per annum ? Or is a home agriculture of this size and form, in relation to our shipping and colonial assets, an adequate basis to work from ? If no present urgency is pressed on the Government by its military advisers, then alternatively either 12 million acres of arable, or a million men over 15 employed, should be taken by agreement of parties as a definite occasion for consideration of the defence problem involved. In saying this, regard is given to the fact that the basis of 1914 did work successfully, and with a margin for assistance to our allies, in a war of a magnitude without precedent, in which our greatest military menace was destroyed. If this suggestion is adopted, consideration of the defence question will take place when the international future is more clear, national finance less strained, and the post-war settlement more complete.

The report is to be obtained from His Majesty's Stationery Office, or from any bookseller, price 5s.

Royal College of Veterinary Surgeons.

Annual General Meeting.

The eighty-first Annual General Meeting of the Royal College of Veterinary Surgeons was held at the College, 10 Red Lion Square, London, W.C.1, on Thursday, June 5th, 1924, Sir Stewart Stockman, President, being in the chair.

The following members also signed the attendance book: Major J. Abson, Mr. H. Begg, Sir L. J. Blenkinsop, Mr. W. Brown, Professor J. B. Buxton, Messrs. J. H. Carter and H. J. Dawes, Major G. W. Dunkin, Professor B. Gorton, Messrs. H. P. Hogben, W. S. King, G. H. Livesey, Sir J. M'Fadyean, Mr. J. W. McIntosh, Sir J. Moore, Messrs. W. D. Rees, J. Rowe, A. L. Sheather, S. H. Slocock, T. F. Spencer, Major-General W. D. Smith, Messrs. T. T. Taylor, F. Ware, E. Alfred West and J. Willett, with Mr. R. Thatcher (Solicitor) and Mr. F. Bullock (Secretary).

The Secretary read the notice convening the meeting, as announced in the *London Gazette*.

Correspondence.—Apologies for absence were announced from Messrs. C. Blackhurst, J. Clarkson, J. C. Coleman, Professor S. H. Gaiger, Messrs. A. Gofton, P. J. Howard, G. P. Male, and Major P. J. Simpson.

Minutes.—The minutes of the previous Annual General Meeting were read and approved.

Council Election—Scrutineers' Report.

The Secretary read the report of the scrutineers upon the election to Council R.C.V.S.

The following were elected members of Council:—J. B. Buxton, J. M'Fadyean, J. Willett, G. H. Locke, W. D. Rees, J. Clarkson, J. T. Share-Jones, G. H. Wooldridge, E. Alfred West, and C. Blackhurst.

The President, in declaring the election of the ten members of Council, announced that the last two gentlemen on the list—Mr. West and Mr. Blackhurst—took the place of Mr. Mulvey and Mr. Price, whose decease during the year they had to mourn. Consequently, their term of office would expire in 1925.

The number of spoilt papers was 3, while 25 papers were received too late.

A vote of thanks to the scrutineers was passed, on the proposition of Mr. Willett, seconded by Mr. King.

Annual Report and Financial Statement.

The Annual Report and Financial Statement were received and adopted, the former being dealt with page by page.

Mr. Rowe, reminding the members that he was President of the Central Veterinary Society when, in the year 1870, that body voted a sum of money for the erection of the central decorative window, asked whether or not it was necessary to have a screen, such as they had at the present time, dwarfing those windows.

Sir John Moore explained that the use of the screen was one of the means which, after very careful consideration, were being employed in the endeavour

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DIVISIONAL REPORT.

Lancashire Division.

Annual Meeting.

The annual meeting of the Lancashire Division was held at the Grand Hotel, Aytoun Street, Manchester, on February 15th, 1924. The chair was taken by the President (J. D. Whitehead, Esq., F.R.C.V.S., D.V.S.M.), and other members present were:—Messrs. J. H. Wright, E. H. Stent, W. Noar, F. Hopkin, J. Holroyd, E. J. Burndred, F. G. Edwards, J. Spruell, J. W. Brittlebank.

Visitors:—Messrs. H. J. Dawes, C. H. Livesey, J. O. Powley and G. D. Munro.

Apologies for unavoidable absence were received from Messrs. Warwick Fowle, W. Packman, M. T. Giblin, E. H. Curbishley, J. Abson, G. C. Lancaster, J. McKinna, W. A. Taylor, R. Hughes, J. H. Carter, F. Ball and H. G. Hewetson.

The minutes of the last annual meeting were taken as read and confirmed.

A letter was read from G. White Wallis, Secretary to the Royal Sanitary Institute, London, S.W.1, stating that a Congress is to be held at Liverpool from July 14th to 19th, 1924. It was proposed by Mr. Wright and seconded by Mr. Stent that a delegate be appointed at a later meeting to attend the conference.

A letter was also read from Mr. G. H. Livesey, General Secretary of the National Veterinary Medical Association, London, stating that his Association had been approached by the Royal College of Veterinary Surgeons with the object of collecting information on the subject of fees payable to witnesses in Courts of Justice in the various areas throughout the country. He asked that the information mentioned on forms (enclosed with letter) be filled in by their members and returned to him at the earliest convenient date. Mr. Livesey stated that he thought that this information would be of great value to the Royal College of Veterinary Surgeons, and he asked that a copy of his letter and form enclosed be forwarded to each member of the Association.

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to effect a much-needed improvement in the acoustics of the Council Chamber. It was proposed, however, to replace the curtains which they now saw by smaller ones, which would go across the windows lower down—a little higher than the screens which were now there. The present positioning of the screens made a wonderful difference to the sound in the room, but it was agreed that they were not very ornamental, and they would prefer to have curtains that could be withdrawn when there was no occasion for their use.

The President having been accorded a vote of thanks, the meeting terminated.

Nomination.—Mr. Mattinson, F.R.C.V.S., D.V.S.M., of the University, Liverpool, was nominated for membership.

Mr. H. T. Matthews, B.V.Sc., M.R.C.V.S., D.V.H., of 113 Woolton Road, Garston, Liverpool, was elected a member.

Presidential Address.

The President then addressed the meeting in the following terms:—

Gentlemen,—In the first place I wish to thank you for the honour of setting me in the presidential chair of this Association. However, you must not forget that I will need the assistance of every member if we are to have a successful year. A good attendance at the meetings is very encouraging to the reader of the paper and also to your officers. Our association meetings are usually well attended, but there is rather a large number of permanent absent members, and it is to them that I appeal. If they would only endeavour to attend an occasional meeting, I feel sure that like myself they would both enjoy and look forward to the meetings. It is usual in a presidential address to deal with some topic of interest to the profession, and I propose very briefly to make a few remarks on the State Veterinary Services.

The Army Veterinary Service.—As you are well aware, this service has grown from the time when the Regimental Veterinary Officer was under the direct command of the Commanding Officer, through various stages until now, when it is a self-contained corps, well-organised and capable of expansion in time of need. The value of the work done by the R.A.V.C. during the war of 1914 to 1918 has been favourably commented on by many competent observers (Sir D. Haig).

Ministry of Agriculture.—The diseases of animals branch of this Government Department has, during recent years, grown in a marked degree. It began first with a few veterinary surgeons under the Privy Council. Then, under the old Board of Agriculture, we had a Department where the administrative and executive duties were carried out by non-professional men, the veterinary surgeon being employed solely for the diagnosis of the disease. To-day this section of the Ministry's activities is controlled by veterinary surgeons, and if any newly-organised department was subjected to a practical test, these veterinary surgeons of the Ministry of Agriculture have been so tested. The outbreaks of foot-and-mouth disease of 1923 and 1924 to-day have been efficiently tackled, and have proved the correctness of their policy and their abilities to carry out the same to a successful conclusion.

Local Authority Appointments.—The majority of these are in connection with large towns; County Councils, with a few exceptions, have not yet taken to the whole-time veterinary officer. Of the five or six counties which have done so, Lancashire is an outstanding example—whether this is due to the ability or to the good sense of the members of the Council I am unable to say; probably both are

enthusiastic, but the work done in that county is an object lesson to all similar authorities. As far as I know, there are about twenty towns employing one or more whole-time veterinary surgeons, the majority of these being in Lancashire and Yorkshire. It is of interest to us in Lancashire to know that Liverpool was the first town to employ a whole-time veterinary surgeon, and this was in the year 1866; Salford followed in the year 1871, and then we had the City of Birmingham. The most recent additions to the list of progressive towns are Preston and Birkenhead. I find that in several cases, *e.g.*, at Birmingham, the first holder of the position was solely a veterinary surgeon for the corporation horses, but as time went on, other duties of a more official character were added. It speaks well for the ability of many of these pioneers in local authority and veterinary services that their responsibilities and duties were so increased. The late Mr. J. Malcolm built up a reputation in that city as to the value of the veterinary surgeon, and there is now quite a large veterinary department employing five veterinary surgeons. Manchester and Edinburgh were among the first cities to employ veterinary surgeons for meat inspection, and both these cities now have large staffs of veterinary surgeons. It must be remembered that Manchester was one of the first places to take up the question of tuberculous milk and has proceeded consistently with the work.

Progress of Veterinary State Services.—Even to-day, many towns do not place all veterinary work under the control of its veterinary surgeon, *i.e.*, some towns have veterinary surgeons purely for meat inspection or in milk and, in many cases, diseases of animals work is carried on by the police or by a local practitioner. The teaching of meat inspection in our various colleges is usually done by the corporation veterinary surgeon, but I know of no college where the law of meat inspection is taught, and if a young graduate is fortunate enough to secure a post, he is well qualified to detect diseased meat, but methods of procedure and the limitations of his powers are, in many cases (owing to his lack of knowledge of the law), rather limited. The R.C.V.S. undoubtedly made a good move when they appointed a special examiner in this subject, and a good choice when they appointed Colonel T. D. Young.

D. V.S.M.—The institution of this diploma was undoubtedly a step in the right direction. It is a subject worthy of consideration, whether the Council of the R.C.V.S. should not recognise teaching institutions other than affiliated veterinary colleges as capable of giving the necessary instruction. In my opinion, more men would sit for the diploma if they could take it at a university close to their homes. Again, I think the R.C.V.S. could reasonably have granted permission to all whole-time veterinary officers who have held their appointments for over three years, to sit for the examination without attending any course of instruction. The present regulations make it very difficult for men holding an appointment or in practice, to obtain the diploma. Another point to which I wish to draw attention, is the lack of co-operation between the Ministry of Agriculture veterinary surgeons and local authority veterinary surgeons. I feel sure that much time and many valuable animals could be salvaged if this was done. The Departmental Committee appointed by the Ministry of Agriculture to enquire into the outbreak of foot-and-mouth disease in 1922 definitely recommended that local authority veterinary surgeons should in such cases be appointed for the time being inspectors of the Ministry and should have the powers and duties of such inspectors, in order that the Ministry could utilise the knowledge of such veterinary inspectors. The Ministry of Health have taken up the Milk Special Designations Order and control the necessary licence for the production of certified milk. This, of course, includes the veterinary examination and tubercular testing of the animals; surely, then, the time has now arrived when they should have a veterinary surgeon on their staff or alternatively a veterinary advisery committee to assist them.

Colonel BRITTLEBANK stated he believed it was customary on these occasions to propose a vote of thanks to the new President, and it was not usual to discuss any suggestions made. He said he had enjoyed listening to the address that night. Mr. Whitehead had covered an enormous field in his speech. He was certain that Mr. Whitehead could be sure of the loyalty of all the members of the association. His plea for greater attendances at the meetings was one that should be broadcast. There was no doubt that a large number of the members found it difficult to attend these meetings owing to pressure of business, travelling facilities, etc., but he found that the people who attended mostly were usually the most busy men. He had great pleasure in proposing that hearty vote of thanks.

Mr. EDWARDS had great pleasure in seconding, and was sure that Mr. Whitehead would receive the support of each member of the association as he did last year. He also hoped that the attendances would be better that year.

The SECRETARY read a letter from Mr. C. H. Ducksbury, M.R.C.V.S., announcing his intention of resigning from the division owing to his removal into the area of the Midland Division, which association he hoped to join. His resignation was accepted with regret.

It was proposed by Colonel BRITTLEBANK and seconded by Mr. WRIGHT that the Secretary write to Sir Stewart Stockman, Chief Veterinary Adviser to the Ministry of Agriculture, asking him to read a paper on foot-and-mouth disease at a future meeting, and that the Farmers' Union be approached with a view to their members attending such meeting. Carried unanimously.

It was proposed by Mr. STENT and seconded by Mr. NOAR that "The Association urge the Government to re-introduce the Tuberculosis Order, 1914, with regard to milk." Carried unanimously.

THE ANNUAL DINNER.

The annual dinner followed at the Grand Hotel, The chair was taken by the President (J. D. White-

head, Esq., F.R.C.V.S., D.V.S.M.), and the following members were present:—Messrs. E. H. Stent, C. W. Elam, J. W. Brittlebank, G. H. Locke, Hy. Sumner, sen., A. M. Munro, W. Woods, H. H. Aldred, T. M. Parker, F. S. Warburton, J. Holroyd, E. J. Burndred, J. H. Wright, A. W. Noel Pillers, F. Hopkin, J. Urmson, E. L. Butters, J. Spruell and W. Noar.

Visitors:—The Mayor and Mayoress of Salford, Alderman C. Hornby, Dr. and Mrs. Osborne, Dr. Veitch Clark, Messrs. H. J. Dawes, G. H. Livesey, J. O. Powley, Bell, O'Leary, Mr. and Mrs. Deschamps, Mrs. J. Urmson, J.P., Mrs. G. H. Locke, Mrs. C. W. Elam, Mrs. E. H. Stent, Mrs. J. D. Whitehead, Mrs. F. Hopkin and Mrs. J. Spruell.

After the loyal toasts, Mr. NOEL PILLERS, of Liverpool, rose to propose the toast of the Borough of Salford. With regard to the origin of the "Salford," the only point he had been able to make out was that the River Irwell, which forms part of the boundary between Manchester and Salford, was a long time ago what one would now call a ford, and near this ford lived a girl named Sally, and from Sally's ford they got Salford. However, the mark of Salford was "Integrity and Industry." The importance of Salford, although people living there might not realise it (the people of Salford did not realise how important they were), was its importance to Manchester. Manchester docks were in Salford, the Manchester Cattle Market in Salford, also the abattoirs. They are not very far from the south of Scotland when they knew that the name of the Mayor was McDougall, also that of their veterinary surgeon was Whitehead. They thought that, in choosing Mr. Whitehead for the veterinary surgeon, Salford had done well. Also McDougall was a name well-known to veterinary surgeons for sheep-dip. Alderman McDougall is well known as a great worker on behalf of poor children. He had tried to make their lives more enjoyable, and they all knew of the great work he had accomplished; they were all very glad to see both he and Mrs. McDougall there that night. (Hear, hear.) Mr. Pillers asked everybody to rise and drink heartily to the County Borough of Salford, coupled with the name of Mr. McDougall.

Alderman MCDOUGALL, in response, said he presumed that by the way Mr. Pillers had proposed that toast he knew his way about Salford. He said there were many things in Salford of which they were proud. The veterinary surgeon, who was also President of that Association, was one of the men of whom they were proud, and when they received the invitation to that dinner, they immediately resolved to come and support him. The Veterinary Profession had been having a lot of trouble lately with foot-and-mouth disease, and he did not think that disease should have spread as it had done. He was glad to have been able to accept the invitation that night and he much appreciated the hospitality extended. He was delighted to know that Mr. Whitehead was the President of that association and thought he was the right man in the right place. He thanked the proposer of the toast to the Royal and Ancient Borough of Salford.

(To be continued.)

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest in these columns

Diary of Events.

June 20—R.A.V.C. Annual Dinner.
Federation of Medical and Allied Services Annual Dinner.
N.V.M.A. Appointments Committee, at the Offices of the Association.
,, 23—D.V.S.M. Written Examination.
,, 25-28—D.V.S.M. Oral and Practical Examinations.
July 2—N.V.M.A. Council and Committee Meetings.
,, 3—R.C.V.S. Committee Meetings.
Annual Dinner, Savoy Hotel, 7 p.m.
,, 4—R.C.V.S. Council and Committee Meetings.
,, 7—R.C.V.S. Written Examinations.
,, 9—R.C.V.S. Oral Examinations begin.

We have heard with great satisfaction of the appointment of John Smith, M.R.C.V.S., D.V.H., J.P., Chief Veterinary Officer, Livingstone, N. Rhodesia, to be an official member of the Legislative Council of Northern Rhodesia. Not only is this an honour to the individual, but it is an honour to his profession, and we very heartily congratulate the Hon. Mr. Smith on his appointment.

* * * *

The Scottish Branch Meeting at Perth last Saturday was quite a successful gathering, about fifty members and students attending. Two papers were read and discussed, the debate being rather lively at times. We hope that at future meetings more time will be allowed for attending to the business side of the Branch Meeting, for, since these only occur about once a year, matters which are bound to arise, and which need care and consideration, have to be dealt with rather hurriedly.

* * * *

The Scottish Branch is fully alive, and is certainly representing the combined interests of veterinary surgeons over the border. We wish we could pay the same compliment to the other branches. Mr. Hugh Begg was elected President for the ensuing year.

THE BERLIN FOOT-AND-MOUTH DISEASE EXPERIMENTS.

Highly important results, says the Berlin correspondent of the *Observer*, may be obtained shortly in connection with the investigations of Geheimrat Dr. Frosch and Professor Dahmen into the cause and the cure of foot-and-mouth disease, if the further experiments now being carried out are crowned with success.

"I do not venture to hope for it any more than I ventured to hope for the discovery of the germ, which I found almost by accident," Professor Dahmen informed him. "What we are now striving for is the serum to render animals immune from the disease. Finding the germ is not finding the serum, and the main trouble about foot-

and-mouth disease is that no kind of immunity is assured from the fact of once having contracted it. It stands to reason that if an animal that has been very ill only three months ago is quite liable to a second and third attack before a year is over, any kind of inoculation, to be of use, must be of a very peculiar consistency.

"I feel I must warn all those anxious inquirers who ask us if this terribly difficult question of immunity has yet been solved. It has not. But we can only work towards that end. What I have actually established in the comparatively short time since the discovery that the cause of the disease was a bacillus and not a protozoon is severe attacks of the illness in guinea-pigs inoculated with artificially grown germs and partial attacks in the cows and pigs used for experiment. That is to say, in the one animal the mouth would be very bad, in the other the feet. The fever was very bad in each case. But what I now need is a complete attack of typical form caused by inoculation with my artificially propagated bacilli."

Professor Dahmen went on to relate that the scepticism of those bacteriological experts who had refused to believe in the existence of the germs, as shown by Dr. Frosch's system of ultra microphotography, has been completely allayed this week by a detailed account of the methods of experiment by which he discovered them. Investigators from Holland who came personally to Berlin to investigate the progress of the experiments have already returned satisfied that the germ had been found, and that work is progressing further.

Professor Dahmen has been working for a year, practically night and day, at his experiments.

Control of Foot-and-Mouth Disease.

Professor Robert Wallace writes in the course of a letter to the press from the University, Edinburgh:—"The reappearance of foot-and-mouth disease at Arngask after a four or five months' period of incubation demonstrates the futility of attempting to destroy the virus left in railway trucks, probably the most fruitful source of infection, by the ordinary method of disinfecting. There still remains the simplest and cheapest method of extirpation capable of general application on a large scale, namely, live steam under pressure. Two parallel lines of railway would be required, one for a train or cattle trucks to be cleansed, and the other to carry the railway engine passing alongside with a hose fitted to the valve of the steam-heating apparatus attached to all modern engines. A few seconds of this steam jet, manually directed, would not only destroy all traces of the virus as they could not be destroyed by disinfectant applied cold in the ordinary way. An outstanding merit of this method is that it cannot be scamped in application without being detected. This process could at once be set in active operation if show committees all over the country would pass a regulation that no stock conveyed in trucks not thus disinfected would be admitted to the show yards. In the interests of public health all milk vans, which are frequently reported to be in an insanitary condition, should be similarly treated."—*Manchester Guardian.*

Olympia Horse Show.

Under the patronage of H.M. the King, the thirteenth International Horse Show will be held at Olympia, London, from Friday, June 20th, to Saturday, June 28th. There are well over 2,000 entries, a material increase on last year, and in the riding and harness classes there are 200 additional exhibitors, many of them being fresh comers. Among the new events are driving and riding classes for amateurs, and these contests are being very well supported.

Jumping competitions will be decided at each afternoon and evening session over the international course. The gala performance is fixed for Monday afternoon, June 23rd, and on this occasion will be decided the jumping for the King George V. Gold Trophy, at present held by France. The competitors in this classic event must be officers, and it is already certain that seven nations will be represented. For the first time the cavalry of the United States Army has entered the lists and is sending a strong contingent of ten selected officers. In addition to Great Britain, the armies of France, Italy, Switzerland, Norway and Poland will compete.

The Prince of Wales' Cup for teams of three officers of all armies will be decided on Thursday afternoon, June 26th. Introduced last year with great success, the Scurry Stakes will be repeated, the Hon. Rodman Wanamaker, C.V.O., presenting a six hundred guinea gold challenge cup for the jumper who covers the course in the shortest time with the least number of faults. The Connaught Challenge Trophy for British officers jumping over the course is fixed for the last Saturday. There will be two coaching marathons from Richmond Park to the Olympia arena, one for road coaches on Saturday afternoon, June 21st, and one for drags on the Tuesday.

The box office for the International Horse Show is now open at 12 Hanover Square, W.1.

Mr. Knight's Belfast Appointment.

The Imperial Secretary has appointed Mr. Luke P. Knight, M.R.C.V.S., to be supervising veterinary officer of the port of Belfast. Mr. Knight entered the service of the Privy Council Office, Dublin, about the year 1894, and continued in that employment until the transfer to the Department of Agriculture and Technical Instruction for Ireland. In the Boer War, Mr. Knight served as civil veterinary officer, first going to purchase remounts and taking a shipload of horses from New Orleans to South Africa. He was for part of the time attached to Remounts and afterwards as veterinary officer to Sir Ian Hamilton's Brigade of Artillery in the field. He was mentioned in despatches and received the King and Queen's medals with five bars. He then rejoined his department, and was engaged in dealing with many serious outbreaks of contagious diseases. He held the position of district veterinary officer for North-West Ireland for twelve years, being stationed at Enniskillen. On the outbreak of the Great War he again volunteered for active service, and was offered a commission, but the home authorities could not dispense with his services. Mr. Knight was transferred from the Department of Agriculture and Technical Instruction to the Imperial Secretary Department, Northern Ireland, and his many friends will be glad to hear of his

promotion. He is the eldest son of Mr. George Knight, late Clerk of the Crown and Peace for Meath.—*Belfast News Letter.*

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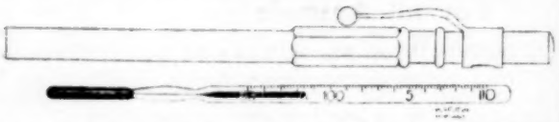

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